Infertility

I. Fertility
II. Causes of infertility
   - Male factor infertility
   - Tubal Infertility
   - Ovarian Factor Infertility
III. Fertility Drugs
IV. Alternatives

I. Fertility
   - Having the capacity for fertilization
   - Dependent upon both male & female, but female's age makes a BIG difference
   - Fertility rates in the U.S.

<table>
<thead>
<tr>
<th>Age Class</th>
<th># births/1,000</th>
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</thead>
<tbody>
<tr>
<td>15-19</td>
<td>41.6</td>
</tr>
<tr>
<td>20-24</td>
<td>102.6</td>
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<tr>
<td>25-29</td>
<td>115.6</td>
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<tr>
<td>30-34</td>
<td>95.1</td>
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<tr>
<td>35-39</td>
<td>43.8</td>
</tr>
<tr>
<td>40-44</td>
<td>8.7</td>
</tr>
<tr>
<td>45-54</td>
<td>0.5</td>
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Why?

Establishing your most "fertile" time of the month:
1. BBT (basal body temperature)

Plot the body temperature on your chart each day.
A drop of at least 0.4 degrees over a 48 hour period is indicative of ovulation, and the woman is fertile during this period.
2. Fertility Kits
determine the amount of LH, via ELISA (ligand binding assay)

- Happy Face = This means that you have detected your LH surge and you should ovulate after the next 24-36 hours. You are at your most fertile period in the next 2 days.
- No happy face = This means that you have not begun your LH surge and are not about to ovulate. You should continue your daily testing.

II. Causes of Infertility

A. Male factor infertility:
   - Semen
     - Volume
     - Viscosity
     - pH
     - Fructose content
     - Sperm count
     - Motility
     - Morphology

B. Female factor

1. Vaginal & Cervical Factors
   - Changes in vaginal pH can reduce sperm motility
   - Problems with cervical mucus blocking sperm entry
   - Sperm agglutination (allergic reaction)

2. Uterine & Tubal Factors
   - Severely "tipped" uterus can impair entry of sperm through endocervical canal
   - Fibroids – obstruct fallopian tubes or interfere with implantation, placental formation
   - Endometriosis – decreases fertility for unknown reasons
   - Occlusion of the Fallopian tubes
     - Scar tissue – PID, surgery, infection
Ultrasound showing hydrosalpinx of blocked tube - circled in red
Ovary stuck up high in scar tissue - circled in blue

A normal ovary also has follicles that vary from less than 4 mm up to 8 mm early in the cycle. This increase as ovulation approaches and can be up to 30 mm with normal ovulation.

3. Ovarian Factor
   a) Ovulation disorder, more likely to occur in older women
   b) Problems with corpus luteum development
   c) Problems with chromosomal content

III. Treatment: Fertility Drugs
   A. Treatment of ovulatory dysfunction: Oral/Injectable
      ✔ Clomiphene citrate (Clomid, Serophene) – non-steroid synthetic anti-estrogen
      • “tricks” the pituitary into producing more follicular stimulating hormone (FSH) and luteinizing hormone (LH)
      • Safest & cheapest
      ✔ Bromocriptine (Parlodel) – dopamine agonist that inhibits prolactin release
      ✔ hMG (Pergonal) – FSH & LH, risky – more side effects, very expensive
      ✔ Purified FSH (Metrodin)
      ✔ hCG (Pregnyl, Ovidrel)
      ✔ GnRH (Factrel)
      ✔ GnRH agonists (Buserlin, Lupron) & antagonists (Antagon)
RISK: High-order Multiple Births

- 10-25% risk of having multiple births when using fertility drugs
- Highly problematic
  - Health risks to babies
  - Cost

"I wish they'd never discovered fertility drugs!"

IV. Alternatives

1. ART (artificial reproductive technology)
   Accounts for 1% of all US births
   - Woman’s age is the most important factor
   - IVF
   - GIFT & ZIFT
   - ICSI

Of those pregnancies, 53% resulted in live births, 29% multiple births, the rest were miscarriages (low success rate, that decreases with age)

IVF (in vitro fertilization)

- Fresh-non-donor eggs, frozen-nondonor, frozen-donor
  - Ovulation Induction & Monitoring
  - Oocyte Retrieval
  - Fertilization
  - Embryo Transfer
  - Cost: $15k – $20k per cycle (if using own eggs)
b. **GIFT & ZIFT**
   - Gamete intrafallopian transfer – use of a laparoscope to guide the transfer of unfertilized eggs and sperm into the fallopian tubes
   - Zygote intrafallopian transfer – fertilizing the eggs in the laboratory and using a laparoscope to guide the transfer of the zygotes into the fallopian tubes
     - the fertilization process takes place inside the fallopian tube rather than in petri dish

  c. **Intracytoplasmic sperm injection (ICSI)**

b. **Blastomere Biopsy**
   - removal of one or two cells from the 6 to 8 cell pre-embryo stage for the purpose of preimplantation genetic analysis.

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**Cost:**
- 1 cycle IVF: $16,000
- ICSI: $1,200
- Blastomere Biopsy: $5,000
- Embryo freezing: $800/year
- Total: $23,000
Surrogacy – a woman, other than the genetic mother agrees to become pregnant and carry the fetus to full term

“Commercial surrogacy grows in India” – SF Chronicle, 10/20

Artificial insemination – use of sperm from a donor or partner to fertilize an egg, sperm collected and placed in vagina or uterus
- IUI – intrauterine insemination, use a catheter to directly place sperm into the uterine cavity
- http://www.hellobaby.com/